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1. (amended) A method for generating mammalian neural crest stem cells comprising:

(a) isolating a pure, homogeneous population of mammalian neuroepithelial stem cells derived from the neural tube from a mammalian embryo at a stage of embryonic development after closure of the neural tube by:

(i) removing a sample of neural tube tissue from a mammal at a stage of embryonic development after closure of the neural tube;

(ii) dissociating cells comprising the sample of neural tube tissue removed from the mammal; and

(iii) plating the dissociated cells in feeder-independent culture on a substratum and in a media comprising fibroblast growth factor and chick embryo extract; and

(b) inducing the isolated, pure, homogenous population of neuroepithelial stem cells to differentiate in vitro by replating the isolated, pure, homogenous population of neuroepithelial stem cells on laminin-coated substrate, withdrawing fibroblast growth factor or chick embryo extract from the isolated, pure, homogenous population of neuroepithelial stem cells, or adding a dorsalizing agent to the isolated, pure, homogenous population of